

Remarks

The Office Action mailed May 9, 2006, and made final, has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-3, 5-9, 11-16, and 18-22 are now pending in this application. Claims 1-22 stand rejected. Claims 4, 10, and 17 have been canceled. Claims 1, 6, 13, and 20 have been amended.

The rejection of Claims 1-7, 10, 11, 13, 14, 17, 18, and 20-22 under 35 U.S.C. § 103(a) as being unpatentable over Derman (U.S. Patent 6,405,107) in view of Langer et al. (U.S. Patent 6,867,711) (hereinafter referred to as "Langer") is respectfully traversed.

Derman describes an instrument display where the outer circle of the display (14) is the conventional Compass Rose. Around the periphery are the standard 360 degrees of the compass, with the cardinal points and other 30 degree positions indicated. The display also illustrates a symbolic aircraft (15), the artificial horizon (16), the bank indicators (18), and a heading "bug" (19). Further, the display includes the speed circle (17) and the standard rate turn indicator (20). The speed circle (17) expands and contracts proportional to either the aircraft ground speed, if no wind vector is present, or the aircraft air speed. The standard rate turn bank angle (20) adjusts itself to show the bank required to make a standard rate (2 minute) turn at the aircraft speed. (Column 13, lines 1-22) Notably, symbolic aircraft (15) is fixed within a center of display (14), and artificial horizon (16) rotates about the display center. Moreover, bank indicators (18) and heading "bug" (19) also rotate about the display center. As such, Derman does not describe or suggest an attitude direction indicator referenced to a center of a compass rose, wherein **displacement of a center of the attitude direction indicator with respect to a center of the compass rose** indicates an amount of deflection in pitch and roll axes.

Langner describes controls that permit increased integration within the cockpit and provide customized presentations of flight information data on display (140) of MFD (100).

For example, overlay controls (114) located on the bottom side (103) of the bezel (101), permit the pilot to adjust the main display (140) by overlaying graphical data related to weather, traffic, and terrain. (Column 6, lines 36-43) Langer also describes an attitude indicator (170) that includes aircraft wingtip markers (175), aircraft nose markers (176), a pitch scale (174), a roll arc (171), bank arrows (172) and slip/skid arrows (173). As such, Langer describes a plurality of elements that move with relation to a center of display (140) to indicate attitude. Langer does not describe or suggest a display that includes an attitude direction indicator referenced to a center of a compass rose, wherein **displacement of a center of the attitude direction indicator with respect to a center of the compass rose** indicates an amount of deflection in pitch and roll axes.

Claim 1 recites a method for displaying attitude, heading, and navigation data on a single display, wherein the method comprises “configuring the display with terrain data...overlaying a portion of the terrain display with a compass rose display...superimposing an attitude direction indicator with the compass rose display, the attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes.”

Neither Derman nor Langner, considered alone or in combination, describe nor suggest a method for displaying attitude, heading, and navigation data on a single display as is recited in Claim 1. More specifically, neither Derman nor Langner, considered alone or in combination, describe nor suggest a method including superimposing an attitude direction indicator with a compass rose display, the attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, and Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a

compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Derman in view of Langner.

Claim 4 has been canceled. Claims 2, 3, and 5 depend from independent Claim 1. When the recitations of Claims 2, 3, and 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2, 3, and 5 likewise are patentable over Derman in view of Langner.

Claim 6 recites “a unit for displaying a navigational display, said unit configured to display a terrain, overlay a portion of the terrain display with a compass rose, and superimpose an attitude direction indicator with the compass rose, the attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes.”

Neither Derman nor Langner, considered alone or in combination, describe nor suggest a unit for displaying a navigational display as is recited in Claim 6. More specifically, neither Derman nor Langner, considered alone or in combination, describe nor suggest an attitude direction indicator referenced to a center of a compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, and Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose.

Accordingly, for at least the reasons set forth above, Claim 6 is submitted to be patentable over Derman in view of Langner.

Claim 10 has been canceled. Claims 7 and 11 depend from independent Claim 6. When the recitations of Claims 7 and 11 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 7 and 11 likewise are patentable over Derman in view of Langner.

Claim 13 recites a visual display format for a navigational system comprising “a terrain display....a compass rose overlaying a portion of said terrain display....an attitude direction indicator superimposed with said compass rose, said attitude direction indicator referenced to a center of said compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes.”

Neither Derman nor Langner, considered alone or in combination, describe nor suggest a visual display format for a navigational system as is recited in Claim 13. More specifically, neither Derman nor Langner, considered alone or in combination, describe nor suggest an attitude direction indicator superimposed with a compass rose, the attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, and Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose.

Accordingly, for at least the reasons set forth above, Claim 13 is submitted to be patentable over Derman in view of Langner.

Claim 17 has been canceled. Claims 14 and 18 depend from independent Claim 13. When the recitations of Claims 14 and 18 are considered in combination with the recitations of Claim 13, Applicants submit that dependent Claims 14 and 18 likewise are patentable over Derman in view of Langner.

Claim 20 recites a display control device comprising “a processor structured for receiving terrain awareness information and samples of current heading and attitude...one or more algorithms resident on said processor for generating, as a function of the current heading and attitude, one or more display control signals for causing a display device to display a portion of the terrain awareness information and information relating to heading and attitude, the display control signals causing the attitude information to be referenced to a center of the heading information, and the attitude and heading information to overlay the terrain awareness information, wherein the attitude information includes an attitude direction indicator and displacement of a center of the attitude direction indicator with respect to a center of the heading information indicates an amount of deflection in pitch and roll axes.”

Neither Derman nor Langner, considered alone or in combination, describe nor suggest a display control device as is recited in Claim 20. More specifically, neither Derman nor Langner, considered alone or in combination, describe nor suggest display control signals causing an attitude information to be referenced to a center of a heading information, wherein the attitude information includes an attitude direction indicator and displacement of a center of the attitude direction indicator with respect to a center of the heading information indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, and Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose.

Accordingly, for at least the reasons set forth above, Claim 20 is submitted to be patentable over Derman in view of Langner.

Claims 21 and 22 depend from independent Claim 20. When the recitations of Claims 21 and 22 are considered in combination with the recitations of Claim 20, Applicants submit that dependent Claims 21 and 22 likewise are patentable over Derman in view of Langner.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1-7, 10, 11, 13, 14, 17, 18, and 20-22 be withdrawn.

The rejection of Claims 8 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Derman in view of Langer and Chen et al. (U.S. Patent Application Publication 2003/0193410) (hereinafter referred to as "Chen") is respectfully traversed.

Derman and Langer are described hereinabove. Chen describes a flight information display that specifies a region in front of the aircraft to show terrain, waypoints and runways, on a vertical profile display. The terrain depicted on the display is the highest terrain that is within a specified swath of terrain along the direction of the airplane's track. If the flight deck also contains on a separate top-down display of terrain in front of the airplane to the compass rose the distance depicted on the side-view display preferably at least half the range that is shown on the top-down display of terrain in front of the airplane to the compass rose; but is preferably no greater than 2 times the range. Paragraphs [0023]-[0025].

Claim 8 depends from Claim 6, which recites "a unit for displaying a navigational display, said unit configured to display a terrain, overlay a portion of the terrain display with a compass rose, and superimpose an attitude direction indicator with the compass rose, the attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes."

None of Derman, Langer and Chen, considered alone or in combination, describe nor suggest a unit for displaying a navigational display as is recited in Claim 6. More

specifically, none of Derman, Langer and Chen, considered alone or in combination, describe nor suggest an attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose, and Chen merely describes a top down display of terrain.

Accordingly, for at least the reasons set forth above, Claim 6 is submitted to be patentable over Derman in view of Langer and Chen.

Claim 8 depends from independent Claim 6. When the recitations of Claim 8 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claim 8 likewise is patentable over Derman in view of Langer and Chen.

Claim 15 depends from Claim 13, which recites a visual display format for a navigational system comprising “a terrain display....a compass rose overlaying a portion of said terrain display....an attitude direction indicator superimposed with said compass rose, said attitude direction indicator referenced to a center of said compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes.”

None of Derman, Langer and Chen, considered alone or in combination, describe nor suggest a visual display format for a navigational system as is recited in Claim 13. More specifically, none of Derman, Langer and Chen, considered alone or in combination, describe nor suggest an attitude direction indicator referenced to a center of a compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to

the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose, and Chen merely describes a top down display of terrain.

Accordingly, for at least the reasons set forth above, Claim 13 is submitted to be patentable over Derman in view of Langer and Chen.

Claim 15 depends from independent Claim 13. When the recitations of Claim 15 are considered in combination with the recitations of Claim 13, Applicants submit that dependent Claim 15 likewise is patentable over Derman in view of Langer and Chen.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 8 and 15 be withdrawn.

The rejection of Claims 9 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Derman in view of Langer and Von Viebahn et al. (U.S. Patent 6,054,937) (hereinafter referred to as “Von Viebahn”) is respectfully traversed.

Derman and Langer are described hereinabove. Von Viebahn describes screen images in various flight situations. Referring to Column 4, lines 24-33, two markers 21, 22 are provided for indicating the pitch angle. The markers 21, 22 indicate the pitch angle firstly by their position in relation to the horizon and secondly numerically. The markers 21, 22 are transparent, so that the background is visible through the markers. Particularly in the range of smaller pitch angles, when the horizon 1 passes through the markers 21, 22, a change in sign of the pitch angle is easily identifiable by a color change inside the markers.

Claim 9 depends from Claim 6, which recites “a unit for displaying a navigational display, said unit configured to display a terrain, overlay a portion of the terrain display with a compass rose, and superimpose an attitude direction indicator with the compass rose, the

attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes.”

None of Derman, Langer and Von Viebahn, considered alone or in combination, describe nor suggest a unit for displaying a navigational display as is recited in Claim 6. More specifically, none of Derman, Langer and Von Viebahn, considered alone or in combination, describe nor suggest an attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose, and Von Viebahn describes pitch angle markers on a flight display that are transparent.

Accordingly, for at least the reasons set forth above, Claim 6 is submitted to be patentable over Derman in view of Langer and Von Viebahn.

Claim 9 depends from independent Claim 6. When the recitations of Claim 9 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claim 9 likewise is patentable over Derman in view of Langer and Von Viebahn.

Claim 16 depends from Claim 13, which recites a visual display format for a navigational system comprising “a terrain display....a compass rose overlaying a portion of said terrain display....an attitude direction indicator superimposed with said compass rose, said attitude direction indicator referenced to a center of said compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes.”

None of Derman, Langer and Von Viebahn, considered alone or in combination, describe nor suggest a visual display format for a navigational system as is recited in Claim 13. More specifically, none of Derman, Langer and Von Viebahn, considered alone or in combination, describe nor suggest an attitude direction indicator referenced to a center of a compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose, and Von Viebahn describes pitch angle markers on a flight display that are transparent.

Accordingly, for at least the reasons set forth above, Claim 13 is submitted to be patentable over Derman in view of Langer and Von Viebahn.

Claim 16 depends from independent Claim 13. When the recitations of Claim 16 are considered in combination with the recitations of Claim 13, Applicants submit that dependent Claim 16 likewise is patentable over Derman in view of Langer and Von Viebahn.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 9 and 16 be withdrawn.

The rejection of Claims 12 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Derman in view of Langer and Naimer et al. (U.S. Patent 6,822,624) (hereinafter referred to as "Naimer") is respectfully traversed.

Derman and Langer are described hereinabove. Naimer describes a display device 400 that has an underlay image depicting a runway and associated geographical details. The underlay image displayed by PFD 400 is generated using the display generation system

where the image of a particular runway at a particular airport is stored in an image database. The geography of an entire airport, including particular landmarks, towers, location of hangars, the topology of paths connecting runways, natural obstacles, man-made obstacles can all be stored in the image database.

Claim 12 depends from Claim 6, which recites “a unit for displaying a navigational display, said unit configured to display a terrain, overlay a portion of the terrain display with a compass rose, and superimpose an attitude direction indicator with the compass rose, the attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes.”

None of Derman, Langer and Naimer, considered alone or in combination, describe nor suggest a unit for displaying a navigational display as is recited in Claim 6. More specifically, none of Derman, Langer and Naimer, considered alone or in combination, describe nor suggest an attitude direction indicator referenced to a center of the compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose, and Naimer describes that an aircraft display can display runway and other geographical details beneath a display of various aircraft parameters.

Accordingly, for at least the reasons set forth above, Claim 6 is submitted to be patentable over Derman in view of Langer and Naimer.

Claim 12 depends from independent Claim 6. When the recitations of Claim 12 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claim 12 likewise is patentable over Derman in view of Langer and Naimer.

Claim 19 depends from Claim 13, which recites a visual display format for a navigational system comprising “a terrain display....a compass rose overlaying a portion of said terrain display....an attitude direction indicator superimposed with said compass rose, said attitude direction indicator referenced to a center of said compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes.”

None of Derman, Langer and Naimer, considered alone or in combination, describe nor suggest a visual display format for a navigational system as is recited in Claim 13. More specifically, none of Derman, Langer and Naimer, considered alone or in combination, describe nor suggest an attitude direction indicator referenced to a center of a compass rose, wherein displacement of a center of the attitude direction indicator with respect to a center of the compass rose indicates an amount of deflection in pitch and roll axes. Rather, in contrast to the present invention, Derman describes an attitude direction indicator within a display of a compass rose, though not referenced to the center of the compass rose such that attitude is measured by displacement of a center of the attitude direction indicator with respect to the center of the compass rose, Langer describes a flight display configured with terrain data, but not a terrain display that is overlaid with a compass rose display, such that attitude is measured by displacement of the center of an attitude direction indicator with respect to the center of the compass rose, and Naimer describes that an aircraft display can display runway and other geographical details beneath a display of various aircraft parameters.

Accordingly, for at least the reasons set forth above, Claim 13 is submitted to be patentable over Derman in view of Langer and Naimer.

Claim 19 depends from independent Claim 13. When the recitations of Claim 19 are considered in combination with the recitations of Claim 13, Applicants submit that dependent Claim 19 likewise is patentable over Derman in view of Langer and Naimer.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 12 and 19 be withdrawn.

Moreover, Applicants respectfully submit that the Section 103 rejections of the presently pending claims are not proper rejections. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Derman, Langer, Chen, Von Viebahn, or Naimer considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine any of Derman, Langer, Chen, Von Viebahn, or Naimer because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching.

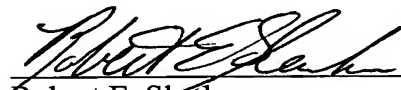
As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejections are based on a combination of teachings selected in an attempt to arrive at the claimed

invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for these reasons, along with the reasons given above, Applicants request that the Section 103 rejections of the Claims be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



Robert E. Stenker
Registration No. 45,112
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070